

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	Group Art Unit:	2618
)		
John Santhoff et al.)	Examiner:	Nguyen Thanh Vo
)		
Serial No.: 10/719,903)	Confirmation No.:	4045
)		
Filed: November 21, 2003)		
)		
For: BRIDGED ULTRA –)		
WIDEBAND)		
COMMUNICATION)		
METHOD AND)		
APPARATUS)		
)		

Carlsbad, California
October 13, 2008

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR REHEARING

Dear Sir:

In response to the new grounds of rejection contained in The Board of Patent Appeals and Interferences Decision of Appeal 2009-1413, decided August 11, 2008, a response to which is due by Monday, October 13, 2008, the following remarks are submitted for the Board's consideration.

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(1) Real Party in Interest

The real party in interest is Pulse-Link, Inc.

(2) Related Appeals/Interferences

No other appeals or interferences exist which relate to the present application or appeal.

(3) Status of Claims

Claims 1-25 are pending and rejected.

(4) Status of Amendments

No amendments are outstanding.

(5) Summary of Claimed Subject Matter

As an initial matter, it is noted that according to the Patent Office, the concise explanations under this section are for Board convenience, and do not supersede what the claims actually state, 69 Fed. Reg. 155 (August 2004), see page 49976. Accordingly, nothing in this Section should be to change (e.g., broaden, narrow) the scope of the claims by the process of claim interpretation, prosecution history estoppel or in any other manner, for purposes of this appeal and/or subsequently to this appeal.

As set forth in independent claim 1, the invention provides a system for communication **between different communications technologies**. For example, in one embodiment of the present invention, a conventional narrowband receiver receives data. The data is then demodulated by a demodulator. A transmitter that is structured to transmit a plurality of electromagnetic pulses receives the data from the demodulator, and transmits the data, using the electromagnetic pulses.

The communication system of the present invention enables communication between two specific, yet very different, communication technologies. One is conventional narrowband technology that employs a substantially continuous sine wave carrier signal, and the other is ultra-wideband technology that employs a plurality of electromagnetic pulses.

As discussed in Applicant's specification (pages 6-8) and in the Scientific American and Microwave Journal articles attached in **Appendix B** of Applicant's Appeal Brief, ultra-wideband (UWB) communication technology is "vastly different" from conventional technology that employs substantially continuous carrier waves. However, once UWB is deployed, it will operate alongside conventional communication technologies. The present

invention provides a system that enables communication between the two very different technologies.

(6) New Grounds of Rejection to be Reviewed on Request for Rehearing

A) Whether claims 1-25 are inherently anticipated under 35 U.S.C. § 102(e) by U.S. Patent 7,177,341 ("McCorkle"); and

B) Whether claims 1-25 are unpatentable under U.S.C. § 103(a) as being obvious over McCorkle in view of U.S. Patent 6,360,075 ("Fischer").

(7) Argument

A) Response to 35 U.S.C. § 102(e) McCorkle anticipation rejection:

McCorkle Fails to Teach or Suggest All Claim Elements

McCorkle does not teach or suggest all of the elements as recited in Applicant's independent claim 1. Independent claim 1, reproduced below, recites that a substantially continuous sine wave carrier signal (*i.e.*, a McCorkle "narrowband" signal) is received and then transmitted as UWB a signal:

1. A communication system comprising:
 - a receiver structured to receive a substantially continuous sine wave carrier signal, the signal modulated to contain communication data;
 - a demodulator communicating with the receiver, the demodulator structured to demodulate the communication data from the substantially continuous sine wave carrier signal; and
 - a transmitter coupled to the demodulator, the transmitter structured to transmit a plurality of electromagnetic pulses, with the pulses configured to include the communication data. (emphasis added)

Applicant notes that the Board concedes the above:

"McCorkle does not explain how the data received from a remote source via carrier 205 is recovered from the carrier. However, in the case where carrier 205 is a microwave carrier, the artisan would have understood that data is necessarily in the form of a continuous sine wave microwave carrier, from which data must be recovered using a suitable microwave receiver and demodulator. Claim 1 is therefore inherently anticipated by McCorkle."

"To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is **necessarily present** in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Company v. Monsanto Company*, 948 F.2d 1264, 1268, 20 U.S.P.Q. 2nd 1746, 1749 (Fed. Cir. 1991). Under the principles of inherency, if the prior **art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates**. *In re King*, 801 F.2d 1324, 1326, 231 U.S.P.Q. 136, 138 (Fed. Cir. 1986).

The Board argues that McCorkle inherently teaches converting "narrowband" signals to ultra-wideband (UWB) signals, in a hypothetical case where a "remote source" is a microwave carrier, and refers to McCorkle's FIGS. 2 and 3. That is, the Board argues that the data received from the "carrier 205" **must necessarily be a non-UWB signal** (i.e., a "narrowband" signal).

In the Board's analysis of McCorkle's FIG. 3 UWB radio, the "radio controller and interface 303" is **"presumably"** coupled to a "carrier 205" which **presumably** receives a non-UWB signal. However, the "radio controller and interface 303" is described in McCorkle as follows:

"The radio controller and interface 303 serves as **an media access control (MAC) interface** between the UWB wireless communication

functions implemented by the receiver 301 and transmitter 305, **and applications that use the UWB communications channel for exchanging data with remote devices**" (col. 8, lines 46-51).

Thus, the "radio controller and interface 303" is a MAC, which is further defined:

"The MAC (Media Access Control) 1450, is the process that establishes the protocol that each radio uses to establish a connection and pass data. It is the interface between the a host computer, for example, and the physical radio" (col. 18, 34-38)

McCorkle also teaches another "communications interface 913" that operates like the "radio controller and interface 303" (*i.e.*, another MAC) and **explicitly** teaches that the "communications interface 913" receives data transmitted using UWB:

"The communications interface 913 provides a two-way UWB data communication coupling to a network link 923, which is connected to the communications network 925. The communications network 925 may be a local area network (LAN), a personal area network (PAN), or the like. For example, the communication interface 913 may be a network interface card and the communications network may be a packet switched UWB-enabled PAN. As another example, the communication interface 913 may be a UWB accessible asymmetrical digital subscriber line (ADSL) card, an integrated services digital network (ISDN) card, or a modem to provide a data communication connection to a corresponding type of communications line" (col. 24, lines 55-67).

Thus, McCorkle **explicitly** teaches that his radio receives UWB data, and thus the data received by his radios is **not necessarily a non-UWB signal**. Therefore, McCorkle **does not "inherently" teach converting non-UWB signals to UWB signals**.

This result is further supported by the fact that McCorkle teaches an "either-or" radio, which also explains the discussion of "narrowband" signals in McCorkle. That is, McCorkle's radio **either** operates as a UWB radio **or** as a conventional narrowband radio:

"Another object of the present invention is to provide a multi-mode transmitter and receiver that, in at least one mode, is configured to transmit and receive and process frequency modulated, frequency hopped spread-spectrum signals." (col. 3 lines 51-55)

The **multi-mode** transceiver transmits and receives **only** UWB signals or **only** FM signals depending on the selected mode of operation:

"by using one and the same circuits for FM and UWB modes, the radio can be manufactured at no greater cost, and the resulting radio uses no more power than one built specifically for a single mode of operation." (col. 4, lines 39-42)

The McCorkle transceiver can be "configured to transmit and process and receive any form of **modulation** under software control" (emphasis added) (col. 3, lines 48-55). But McCorkle does not teach bridging different signal types: "in at least one mode, is configured to **transmit and receive** and process bi-polar UWB signals... in at least one mode, is configure to **transmit and receive** and process frequency hopped spread-spectrum signals." (emphasis added) (col. 3, lines 48-55). That is, McCorkle's transceiver operates mutually exclusively as an FM radio or as a UWB radio.

"Furthermore, when receiving frequency-modulation (FM) signals, the mixer may not use, the output of the of a bi-phase wavelet generator, as is the case for a bi-phase modulated UWB radio..." (col. 4, lines 13-16)

The transceiver operates **only in either a UWB or a narrowband mode** that is user-selected or based on received waveform detection.

“The second data switch 535 and the TX data switch 547 determine the operation mode of the transceiver 500, **either a UWB mode or a narrowband (NB) mode...**” (emphasis added) (col. 14, lines 27-29)

McCorkle’s transceiver modes can EITHER process ultra-wideband signals OR process continuous sine wave carrier signals but the transceiver does not convert communication data from narrowband signals to electromagnetic pulses as recited in Applicant’s claim 1.

Accordingly, Applicant respectfully submits that McCorkle cannot, either explicitly or inherently, anticipate independent claim 1.

B) Response to 35 U.S.C. § 103(a) McCorkle in view of Fischer obviousness rejection:

The Board makes a Section 103 rejection by combining two, separate references. Because a modification to the prior art is required to support this 35 U.S.C. section 103 rejection, an **appropriate** motivation to modify must be set forth in order to establish a *prima facie* case of obviousness. *See, In re Fritch*, 972 F.2d 1266 (Fed. Cir. 1992).

The Applicant respectfully traverses the Board’s assertion that adding the teachings of Fischer to McCorkle would have been obvious to one of ordinary skill in the art having common sense. The Board articulated its rationale for combining the references as follows:

“Alternatively, it would have been obvious in view of the repeater apparatus shown in Fischer’s Figure 2 (particularly antennas 124a-f, receivers 130a-f, and QPSK demodulators 132a-f) that the data received from a remote source via McCorkle’s carrier 205 can take the form of modulation of a continuous sine wave carrier signal and can be recovered therefrom by a microwave antenna, receiver and demodulator.” (page 25, lines 3-8)

Thus, Fischer is provided for a teaching that McCorkle’s carrier 205 may receive “a continuous sine wave carrier signal” (*i.e.*, McCorkle’s “narrowband signals”). However, as

previously explained and extensively disclosed (see McCorkle's Figure 5; col. 3, lines 52-55; col. 4, lines 24-29 and lines 39-42; col. 14, lines 27-29, etc.), McCorkle's transceiver can already receive frequency modulated signals in "narrowband mode" (see the above discussion of McCorkle's "either-or" operation modes). **Consequently, Fischer's teachings are utterly superfluous, as McCorkle already suggests receiving narrowband signals. That is, Fischer adds nothing, and therefore Applicant submits that the motivation to combine the two references can only come from improper hindsight reconstruction.**

What is missing from both references, when considered either alone or in combination, is:

- a receiver structured to receive a substantially continuous sine wave carrier signal, the signal modulated to contain communication data;

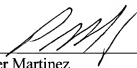
- a demodulator communicating with the receiver, the demodulator structured to demodulate the communication data from the substantially continuous sine wave carrier signal; and

- a transmitter coupled to the demodulator, the transmitter structured to transmit a plurality of electromagnetic pulses, with the pulses configured to include the communication data. (emphasis added)

Conclusion

For all of the reasons set forth above, Applicant respectfully submits that the rejection of claims 1-25 should be reversed. A Notice of Allowance is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'PM', is written over a horizontal line.

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APPENDIX A - APPEALED CLAIMS

1. (Original) A communication system comprising:
 - a receiver structured to receive a substantially continuous sine wave carrier signal, the signal modulated to contain communication data;
 - a demodulator communicating with the receiver, the demodulator structured to demodulate the communication data from the substantially continuous sine wave carrier signal; and
 - a transmitter coupled to the demodulator, the transmitter structured to transmit a plurality of electromagnetic pulses, with the pulses configured to include the communication data.
2. (Original) The communication system of claim 1, wherein the substantially continuous sine wave carrier signal is selected from a group consisting of: an amplitude modulated signal, a phase angle modulated signal, a frequency angle modulated signal, an orthogonal frequency division multiplexing modulated signal, a quadrature amplitude modulation signal, a dual sideband modulated signal, a single sideband modulated signal, and a vestigial sideband modulated signal.
3. (Original) The communication system of claim 1, wherein the substantially continuous sine wave carrier signal has a radio frequency bandwidth that may range between about 10 kilohertz to about 5 megahertz.

4. (Original) The communication system of claim 1, wherein the demodulator is selected from a group consisting of: an amplitude demodulation circuit, a quadrature amplitude demodulation circuit, a frequency angle demodulation circuit, a phase angle demodulation circuit, and an orthogonal frequency division demodulating circuit.
5. (Original) The communication system of claim 4, wherein the amplitude demodulation circuit is selected from a group consisting of: a dual sideband demodulation circuit, a single sideband demodulation circuit, and a vestigial sideband demodulation circuit.
6. (Original) The communication system of claim 2, wherein the dual sideband modulated signal has a suppressed carrier.
7. (Original) The communication system of 4, wherein the amplitude demodulation circuit comprises a low pass filter.
8. (Original) The communication system of claim 2, wherein the single sideband modulated signal has a suppressed carrier.
9. (Original) The communication system of claim 1, further including a first transmission medium coupled to the receiver, wherein the receiver receives the substantially continuous sine wave carrier signal through the first transmission medium.
10. (Original) The communication system of claim 9, wherein the first transmission medium is a wireless medium.

11. (Original) The communication system of claim 9, wherein the first transmission medium is selected from a group consisting of: an optical fiber ribbon, a fiber optic cable, a single mode fiber optic cable, a multi-mode fiber optic cable, a twisted pair wire, an unshielded twisted pair wire, a plenum wire, a PVC wire, a coaxial cable, and an electrically conductive material.
12. (Original) The communication system of claim 1, further including a second transmission medium coupled to the transmitter, wherein the transmitter transmits the plurality of electromagnetic pulses through the second transmission medium.
13. (Original) The communication system of claim 12, wherein the second transmission medium is a wireless medium.
14. (Original) The communication system of claim 12, wherein the second transmission medium is selected from a group consisting of: an optical fiber ribbon, a fiber optic cable, a single mode fiber optic cable, a multi-mode fiber optic cable, a twisted pair wire, an unshielded twisted pair wire, a plenum wire, a PVC wire, a coaxial cable, and an electrically conductive material.
15. (Original) The communication system of claim 1, wherein each of the plurality of electromagnetic pulses comprises an ultra-wideband pulse.
16. (Original) The communication system of claim 15, wherein each of the plurality of ultra-wideband pulses has a duration that ranges from about 10 picoseconds to about 10 milliseconds.

17. (Original) The communication system of claim 1, wherein the transmitter comprises an ultra-wideband pulse modulator that is structured to transmit a multiplicity of ultra-wideband pulses.

18. (Original) The communication system of claim 17, wherein the ultra-wideband pulse modulator is selected from a group consisting of: a pulse amplitude modulator, a pulse position modulator, a pulse duration modulator, a ternary pulse modulator, an on-off keying pulse modulator, a coded recurrence modulator, a sloped amplitude modulator, and a pulse phase modulator.

19. (Original) The communication system of claim 1, wherein each of the plurality of transmitted electromagnetic pulses occupies substantially the same radio frequency spectrum.

20. (Original) The communication system of claim 1, wherein each of the plurality of electromagnetic pulses is transmitted so that each pulse occupies a discrete portion of the radio frequency spectrum.

21. (Original) The communication system of claim 1, wherein the communication data is selected from a group consisting of: voice data, video data, audio data, and high-definition video data.

22. (Original) The communication system of claim 1, wherein the communication data is segmented into individual components selected from a group consisting of: received data, routing information, destination information, quality-of-service information, bit-error-rate information, priority information and latency information.

23. (Original) The communication system of claim 1, wherein the communication data is received in a first communication format, segmented, and re-assembled in a second communication format.
24. (Original) The communication system of claim 23, wherein the second communication format comprises an ultra-wideband communication format.
25. (Original) The communication system of claim 23, wherein the first communication format includes a format selected from a group consisting of: a substantially continuous sine wave carrier signal format; an amplitude modulated signal format, a phase angle modulated signal format, a frequency angle modulated signal format, an orthogonal frequency division multiplexing modulated signal format, a quadrature amplitude modulation signal format, a dual sideband modulated signal format, a single sideband modulated signal format, and a vestigial sideband modulated signal format.

APPENDIX B - EVIDENCE

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)

APPENDIX C - RELATED PROCEEDINGS

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)